

LISTING OF CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A Web Services push gateway for interfacing Web Services push applications and mobile terminals operable with one of a plurality of different mobile push technologies, the Web Services push gateway comprising:

a Web Services endpoint to terminate Web Services protocols utilized by the Web Services push applications in providing push messages;

a plurality of mobile push bearers each configured to communicate with a different one of the plurality of mobile push technologies;

a push adaptation layer coupled to the plurality of mobile push bearers and configured to collect bearer characteristics from each of the mobile push bearers; and

a push router coupled to the Web Services endpoint to receive the push messages, and coupled to the mobile push bearers to forward the push messages to an elected one of the mobile push bearers for ultimate delivery to a recipient mobile terminal employing a mobile push technology corresponding to the elected mobile push bearer.

2. (original) The Web Services push gateway as in Claim 1, further comprising a presence agent coupled to the push router to provide the push router with recipient presence information including the recipient mobile terminal's online status and mobile terminal characteristics, wherein the push router's election of the elected one of the mobile push bearers is based at least in part on the recipient presence information.

3. (original) The Web Services push gateway as in Claim 1, further comprising a user preference agent coupled to the push router to provide the push router with particular user preferences identified by the user of the recipient mobile terminal, wherein the push router's election of the elected one of the mobile push bearers is based at least in part on the user preferences.

4. (currently amended) The Web Services push gateway as in Claim 1, ~~further comprising a push adaptation layer coupled to the plurality of mobile push bearers to collect bearer characteristics from each of the mobile push bearers,~~ wherein the push router's election of the elected one of the mobile push bearers is based at least in part on the bearer characteristics.

5. (original) The Web Services push gateway as in Claim 1, further comprising a storage buffer to store one or more of the push messages if the push messages are not to be immediately sent, wherein a decision to store the one or more push messages is based on at least one of recipient presence information, user preferences, and bearer characteristics.

6. (original) The Web Services push gateway as in Claim 1, wherein the Web Services endpoint comprises a transport layer server for terminating the Web Services protocols.

7. (original) The Web Services push gateway as in Claim 6, wherein the transport layer server is an HTTP server.

8. (original) The Web Services push gateway as in Claim 1, wherein the Web Services endpoint comprises an Extensible Markup Language (XML) messaging engine to parse incoming requests associated with the push messages.

9. (original) The Web Services push gateway as in Claim 8, wherein the XML messaging engine comprises a Simple Object Access Protocol (SOAP) engine.

10. (original) The Web Services push gateway as in Claim 1, wherein the Web Services endpoint comprises a registry interface to interface with a service registry to advertise its push service.

11. (original) The Web Services push gateway as in Claim 1, further comprising a presence agent coupled to the push router to provide the push router with recipient presence

information including the recipient mobile terminal's online status and mobile terminal characteristics.

12. (original) The Web Services push gateway as in Claim 1, further comprising a user preference agent coupled to the push router to provide the push router with particular user preferences identified by the user of the recipient mobile terminal.

13. (original) The Web Services push gateway as in Claim 12, wherein the user preferences agent comprises a preference repository to store the user preferences for each potential push message recipient.

14. (original) The Web Services push gateway as in Claim 12, further comprising a user preference interface coupled to the user preference agent to allow the user of the recipient mobile terminal to enter and/or modify the user preferences.

15. (original) The Web Services push gateway as in Claim 14, wherein the user preference interface is an HTTP server in which the user of the recipient mobile terminal accesses via a web browser.

16. (original) The Web Services push gateway as in Claim 1, further comprising a push adaptation layer coupled to the plurality of mobile push bearers to collect bearer information from each of the mobile push bearers, and coupled to the push router to receive and direct the push messages to the elected one of the mobile push bearers for ultimate delivery to the recipient mobile terminal.

17. (original) The Web Services push gateway as in Claim 1, wherein at least one of the mobile push bearers is a Short Message Service (SMS) bearer for connecting to a Short Message Service Center (SMSC).

18. (original) The Web Services push gateway as in Claim 1, wherein at least one of the mobile push bearers is a Wireless Application Protocol (WAP) Push bearer for connecting to a WAP Push Proxy Gateway (PPG) using the WAP Push Access Protocol (PAP).

19. (original) The Web Services push gateway as in Claim 1, wherein at least one of the mobile push bearers is a Wireless Application Protocol (WAP) Push bearer for connecting to the recipient's mobile terminal via the WAP Push Over-the-Air (POTA) protocol.

20. (original) The Web Services push gateway as in Claim 1, wherein at least one of the mobile push bearers is a Multimedia Messaging Service (MMS) bearer for communicating multimedia push messages via a WAP MMS protocol.

21. (original) The Web Services push gateway as in Claim 1, wherein at least one of the mobile push bearers is a Session Initiation Protocol (SIP) bearer to send the push messages via the SIP protocol.

22. (currently amended) A network system for communicating push messages, comprising:

one or more mobile terminals capable of receiving push messages via one of a plurality of mobile push technologies;

one or more Web Services applications capable of providing the push messages via Web Services protocols; and

a Web Services push gateway for interfacing the push messages provided by the Web Services applications to any of the plurality of mobile push technologies, the Web Services push gateway configured to collect bearer characteristics from each of a plurality of mobile push bearers respectively associated with the plurality of mobile push technologies.

23. (original) The network system as in Claim 22, wherein the Web Services push gateway comprises:

a first interface to receive the push messages via the Web Services protocols from the Web Services applications;

a plurality of different push bearers, each capable of transmitting the push messages to a recipient mobile terminal via a respective mobile push technology; and

a push message router coupled to receive the push messages from the first interface, to process bearer criteria and designate one of the mobile push bearers for transmitting the push messages in response thereto, and to route the push messages to the designated mobile push bearer for ultimate transmission to the recipient mobile terminal using the respective mobile push technology.

24. (currently amended) A method of facilitating the transmission of push messages to mobile terminals which collectively implement a plurality of different mobile push technologies, the method comprising:

providing a first gateway interface to a Web Services domain, wherein the Web Services domain comprises at least one Web Service push application that transmits at least one push message;

providing a second gateway interface to a mobile push technologies domain, wherein the mobile push technologies domain comprises one or more mobile terminals each operable with at least one of the mobile push technologies;

collecting bearer characteristics from a plurality of mobile push bearers associated with the mobile push technologies;

routing the push message received at the first gateway interface to an elected one of a the plurality of mobile push bearers; and

transmitting the push message from the elected mobile push bearer to a recipient mobile terminal via the second gateway interface, wherein the push message is transmitted utilizing the mobile push technology provided by the elected mobile push bearer.

25. (original) The method of Claim 24, further comprising converting the push message received at the first gateway interface from a Web Service protocol to a mobile push protocol associated with the elected mobile push bearer.

26. (original) The method of Claim 24, further comprising processing bearer election criteria to identify the mobile push bearer to be elected to transmit the push message via the second gateway interface.

27. (original) The method of Claim 26, wherein processing bearer election criteria comprises processing recipient presence information including the recipient mobile terminal's online status and mobile terminal characteristics.

28. (original) The method of Claim 26, wherein processing bearer election criteria comprises processing user preferences identified by the user of the recipient mobile terminal.

29. (original) The method of Claim 26, wherein processing bearer election criteria comprises processing bearer characteristics from each of the mobile push bearers.

30. (original) The method of Claim 29, wherein the bearer characteristics comprise one or more of bearer bandwidth, content capability, bearer availability, bearer latency, delivery assurance, and quality of service.

31. (original) The method of Claim 24, further comprising parsing the push message at the first gateway interface.

32. (original) The method of Claim 24, further comprising processing message transmission parameters to identify transmission guidelines for transmitting the push message from the elected mobile push bearer.

33. (original) The method of Claim 32, further comprising buffering the push message prior to transmitting the push message from the elected mobile push bearer, when processing the message transmission parameters reveals postponement of the push message transmission.

34. (original) The method of Claim 24, further comprising providing a delivery report to the Web Service push application that initiated the push message, after the push message has been transmitted to the recipient mobile terminal.

35. (currently amended) A method of facilitating the transmission of push messages to mobile terminals utilizing a plurality of different mobile push technologies, the method comprising:

- receiving the push messages from Web Services applications via Web Services protocols;

- obtaining presence information relating to the availability and type of recipient mobile terminal;

- obtaining user preference information relating to particular user preferences identified by the user of the recipient mobile terminal;

- obtaining bearer availability and capabilities information ~~for~~ from each of a plurality of different mobile push bearers each capable of communicating with the mobile terminals using a different mobile push technology;

- selecting a mobile push bearer to transmit the push message to the recipient mobile terminal based on one or more of the presence information, user preference information, and bearer availability and capabilities information; and

- delivering the push message from the selected mobile push bearer to the recipient mobile terminal using the mobile push technology provided by the selected mobile push bearer.

36. (original) The method of Claim 35, wherein selecting a mobile push bearer comprises determining a closest match of the bearer availability and capabilities information with one or more of the presence information and the user preference information.

37. (original) The method of Claim 35, wherein selecting a mobile push bearer comprises determining a weighted match of the bearer availability and capabilities information with one or more of the presence information and the user preference information.

38. (original) The method of Claim 37, further comprising providing feedback regarding the quality of the selection of the mobile push bearer.

39. (original) The method of Claim 35, wherein obtaining presence information comprises querying for information indicative of whether the recipient mobile terminal is currently online.

40. (original) The method of Claim 35, wherein obtaining presence information comprises querying for terminal type characteristics of the recipient mobile terminal.

41. (original) The method of Claim 35, wherein obtaining user preference information comprises querying for terminal preferences indicative of a range of mobile terminals available as the recipient mobile terminal.

42. (original) The method of Claim 41, wherein querying for terminal preference information further comprises querying for content types for each of the mobile terminals available as the recipient mobile terminal.

43. (original) The method of Claim 35, wherein obtaining user preference information comprises querying for network preferences indicative of a type of network the user is currently operating within.

44. (original) The method of Claim 35, wherein obtaining user preference information comprises querying for presence preferences indicative of user activities at any given time.

45. (currently amended) A network system for facilitating the transmission of push messages to mobile terminals which collectively implement a plurality of different mobile push technologies, the network system comprising:

first interface means for interfacing to a Web Services domain, wherein the Web Services domain comprises at least one Web Service push application that transmits at least one push message;

second interface means for interfacing to a mobile push technologies domain, wherein the mobile push technologies domain comprises one or more mobile terminals each operable with at least one of the mobile push technologies;

means for collecting bearer characteristics from a plurality of mobile push bearers associated with the mobile push technologies;

means for routing the push message received via the first interface means to an elected one of a the plurality of mobile push bearers; and

means for transmitting the push message from the elected mobile push bearer to a recipient mobile terminal via the second interface means, wherein the push message is transmitted utilizing the mobile push technology provided by the elected mobile push bearer.

46. (currently amended) A computer-readable medium having computer-executable instructions for facilitating the transmission of push messages to mobile terminals utilizing a plurality of different mobile push technologies, the computer-executable instructions performing steps comprising:

receiving the push messages from Web Services applications via Web Services protocols;

collecting one or more of presence information relating to the availability and type of recipient mobile terminal, user preference information relating to particular user preferences identified by the user of the recipient mobile terminal, and bearer availability and capabilities information ~~for~~ from each of a plurality of different mobile push bearers each capable of communicating with the mobile terminals using a different mobile push technology;

selecting a mobile push bearer to transmit the push message to the recipient mobile terminal based one or more of the presence information, user preference information, and bearer availability and capabilities information; and

delivering the push message from the selected mobile push bearer to the recipient mobile terminal using the mobile push technology provided by the selected mobile push bearer.